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Natural Resources Conservation Service

# Montana Basin Outlook Report June 1, 1997







## Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

For more water supply and resource management information, contact: See Attached List

How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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United States Department of Agriculture Natural Resources Conservation Service (formerly the Soil Conservation Service) Bozeman, Montana

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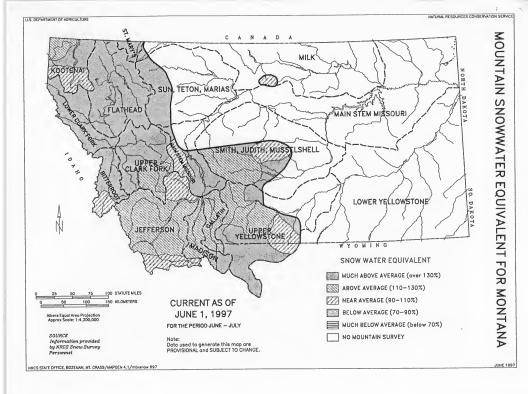
Yellowstone County Harold Cottet Jr. 657-6527

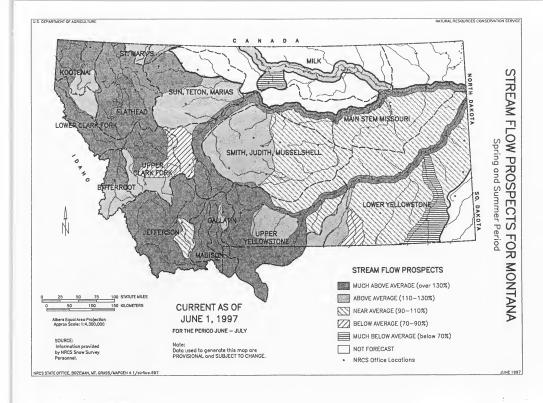
### BASIN SUMMARY OF SNOW COURSE DATA

### JUNE 1997

SNOW COURSE	ELEVATION				LAST YEAR	AVERAGE 1961-90
MONTANA						
ALBRO LAKE PILLOW	8300	6/01/97		16.9		
BADGER PASS PILLOW	6900	6/01/97		36 2	37.5	20.9
BANFIELD MTN PILLOV	5600	6/01/97		8 5	10.9	2.9
BARKER LAKES PILLOV	8250	6/01/97		12.0	16.7	
BASIN CREEK PILLOW		6/01/97		4 7	7.0	
RASSOO PEAK	7180 5150 8850	5/29/97	0			
BEAGLE SPGS PILLOW BEAVER CREEK PILLOW BISSON CREEK PILLOW	8850	5/29/97 6/01/97		.0	.0	
BEAVED CREEK DILLOW					16.8	
BISSON CREEK TILLOW	7850 7850 7950	6/01/97		12.2 .0 50.2 .0 .2	0.0	.0
BLACK BEAR PILLOW	7950	6/01/97		50.2	46.1	27.5
BLACK PINE PILLOW	7,550	6/01/07		50.2	5 3	2.4
BLACKTAIL	5650 7550	5/30/97	1	.0	3.3	2.4
BLOODY DICK PILLOW				.0	5.8	1.7
BOULDER MTN PILLOW		6/01/97		10.7 .0	10.0	10.5
BOX CANYON PILLOW	6700 5100	6/01/97		10.7	18.9	10.5
	6700	6/01/97	_		.0	.0
BOXELDER CREEK	2100	3/23/31		.0	.0 17.8	
BRACKETT CR PILLOW	7320	6/01/97		28.7	17.8	12.6
BRIDGER BOWL	7250	5/29/97			23.0	
CALVERT CR PILLOW		6/01/97		.0 32.7 .0	.0	.0
CARROT BASIN PILLOV				32.7	41.9	
CHICKEN CREEK	4060	5/27/97	0	.0	.0	.0
CLOVER MDW PILLOW	8800	6/01/97		13.3	23.6	
COLE CREEK PILLOW COMBINATION PILLOW	7850	6/01/97		13.3 8.7 .0	21.8	12.9
COMBINATION PILLOW	5600	6/01/97		. 0	. 0	. 0
COPPER BOTTOM PILLO	W 5200	6/01/97		.0 18.9 .0	. 0	. 0
COPPER CAMP PILLOW	6950	6/01/97		18.9	27.4	12.7
CRYSTAL LAKE PILLO	7 6050	6/01/97		.0	.0	1.0
DALY CREEK PILLOW	5780	6/01/97		.0 38.4 .0	. 0	.0
DARKHORSE LK. PILLO	W 8700	6/01/97		38.4	40.7	28.5
DEADMAN CR PILLOW	6450	6/01/97		. 0	.0	.0
DISCOVERY BASIN	7050	5/30/97	15	7.0 .0 .0 .0 .0 44.5 53.5	6.8	4.8
DIVIDE PILLOW	7800	6/01/97		. 0	6.5	1.7
DUPUYER CREEK PILLO		6/01/97		. 0	. 0	. 0
EMERY CREEK PILLOW		6/01/97		. 0	.0	. 0
FISHER CREEK PILLO		6/01/97		44.5	41.5	31.7
FLATTOP MTN PILLOW		6/01/97		53.5	56.6	34.4
FROHNER MDWS PILLO		6/01/97		. 0	.0	1.2
GARVER CREEK PILLO		6/01/97		.0 .0 .0		
GRAVE CRK PILLOW	4300	6/01/97		.0	.0	
GRIFFIN CR DIVIDE	5150	5/29/97	0	.0 .0 .0 20.9 23.1 21.9		
HAND CREEK PILLOW		6/01/97		.0	0	
HAWKINS LAKE PILLO		6/01/97		20.0	.0 27.4	19.5
HELL ROARING DIVID		5/30/97	4.0	20.9	27.4	11.2
HERRIG JUNCTION	4850	5/27/97	42	23.1 21.9 58.9	18.9	2.4
		6/01/97	40	21.7	46.0	29.2
HOODOO BASIN PILLO		6/01/97		50.5	40.5	.0
KRAFT CREEK PILLOW		6/01/97		.0	.0	.0
LAKEVIEW RDG. PILL		6/01/9/		. 0	.0	.0
LEMHI RIDGE PILLOW		6/01/97		.0	4.1	
LICK CREEK PILLOW		6/01/97		.0 .0 .0 .0	.0	.6
LONE MOUNTAIN PILL		6/01/97		15.8 18.8	24.9	.6 13.0 13.5
LOWER TWIN PILLOW	7900	6/01/97		18.8	21.4	13.5

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
 LUBRECHT PILLOW	4680	6/01/97		.0	.0	. 0
MADISON PLT PILLOW	7750	6/01/97		14.7	20.5	7.5
MANY GLACIER PILLOW	4900	6/01/97		.0	.0	.0
MAYNARD CREEK	6210	5/29/97	15	5.2	.5	3.2
MONUMENT PK PILLOW	8850	6/01/97		23.3	28.8	
MOSS PEAK PILLOW	6780	6/01/97		52.8	47.5	16.2 30.1
MT LOCKHART PILLOW	6400	6/01/97				
MULE CREEK PILLOW	8300	6/01/97		14.1 15.9	18.8	10.5
NEVADA CREEK PILLOW	6480	6/01/97		3.7	20.9	9.0
NEVADA CREEK FILLOW NEVADA RIDGE PILLOW	7020				7.8	3.8
NEZ PERCE CMP PILLOW		6/01/97		5.1	12.4	. 6
NOISY BASIN PILLOW		6/01/97		. 9	.0	. 2
	6040	6/01/97		48.1	44.0	30.2
N.F. ELK CR PILLOW	6250	6/01/97		.3	.0	. 9
NF JOCKO PILLOW	6330	6/01/97		46.1	45.1	27.3
N.E. ENTRANCE PILLOW		6/01/97		.0	.0	. 2
OPHIR PARK	7150	5/26/97	15	6.1	8.6	7.6
PETERSON MEADOWS	7200	5/30/97	13	5.3	5.6	1.2
PICKFOOT CRK PILLOW	6650	6/01/97		.0	.0	. 0
PIKE CREEK PILLOW	5930	6/01/97		11.4	19.7	7.9
PLACER BASIN PILLOW	8830	6/01/97		14.1	21.2	16.2
PORCUPINE PILLOW	6500	6/01/97		.0	.0	.0
RED MOUNTAIN	6000	5/29/97	15	7.5	11.3	4.2
REVAIS CREEK	4800	5/30/97	0	.0	.0	.0
ROCKER PEAK PILLOW	8000	6/01/97		14.4	17.7	13.2
ROCKY BOY PILLOW	4700	6/01/97		.0	. 0	.0
ROCKY BOY	4700	5/29/97	0	.0	.0	. 3
SADDLE MTN PILLOW	7900	6/01/97		16.6	30.4	17.5
SHORT CREEK PILLOW	7000	6/01/97		.0	.0	.0
SHOWER FALLS PILLOW	8100	6/01/97		30.2	35.2	23.3
SILVER RUN PILLOW	6630	6/01/97		.0	.0	.0
SKALKAHO PILLOW	7260	6/01/97		27.5	28.8	15.8
S.F. SHIELDS PILLOW	8100	6/01/97		25.3	22.7	13.3
SPUR PARK PILLOW	8100	6/01/97		18.9	23.0	14.8
SQUAW PEAK PILLOW	6150	6/01/97		6.0	3.5	5.0
STAHL PEAK PILLOW	6030	6/01/97		36.0	59.5	27.3
STRYKER BASIN	6180	5/27/97	61	34.0	40.6	20.6
STUART MOUNTAIN	7400	5/30/97	65	36.3	33.0	
STUART MOUNTAIN PILL	7400	6/01/97		37.4	33.9	19.8
SUCKER CREEK	3960	5/29/97	0	.0	.0	. 2
TAYLOR ROAD	4080	5/29/97	0	.0	.0	.4
TEPEE CREEK PILLOW	8000	6/01/97		3.7	10.0	5.3
TIZER BASIN PILLOW	6840	6/01/97		.0	.0	2.0
TV MOUNTAIN	6800	5/30/97	26	13.0	12.0	
TWELVEMILE PILLOW	5600	6/01/97		.0	.0	. 6
TWIN LAKES PILLOW	6400	6/01/97		36.1	30.5	25.8
WALDRON PILLOW	5600	6/01/97		.0	.0	.0
WARM SPRINGS PILLOW	7800	6/01/97		24.9	31.0	19.6
WEST YELLOWSTONE	6700	6/01/97	0	.0	.0	.0
WHISKEY CREEK PILLOW		6/01/97		.4	2.9	1.2
WHITE MILL PILLOW	8700	6/01/97		28.9	37.0	19.4
WOOD CREEK PILLOW	5960	6/01/97		.0	.0	.1
		0,01/3/		.0	.0	. 1







# Montana Water Supply Outlook Report as of June 1, 1996

Water supply conditions are looking to be average to well above average across the state for the first part of the summer. With the snowpack melting out much earlier than normal, many streams may reach lower flows than normal during late summer. There have been many areas across the state that have experienced flooding this season. A lot of catastrophic flooding potential did not occur because soils were not frozen and there were a couple of cold snaps that slowed the snow melt. Advanced warning and preparation for a large snow melt allowed many areas to prepare early and keep losses lower that could have occurred without early warning and preparations.

### Snowpack

As of June 1, mountain snow water content in the mountainous areas of Montana were 52 percent above average and 11 percent below last year. Most basins, except in southwest and south-central Montana, had their snow melt peaks occur during May. Southwest and south-central basins are forecast to reach their snow melt peak flows during the first or second week of June. The snowpack this year had very high densities on May 1 indicating uniform temperature through the snowpack, and when warm temperatures occurred well above average snow melt rates occurred and got the rivers rising much earlier than normal.

West of the Continental Divide, snowpacks were 67 percent above average and 3 percent below last year. East of the Continental Divide, snowpacks were 28 percent above average and 27 percent below last year.

RIVER BASIN	r OF	AVERA	AGE	ob	OF	LAST	YEAR
COLUMBIA		. 167					97
KOOTENAI		. 150					93
FLATHEAD		. 171					94
UPPER CLARK FORK		. 148					84
BITTERROOT		. 188					111
LOWER CLARK FORK		. 243					146
MISSOURI		. 135					79
MISSOURI HEADWATERS		. 136					79
JEFFERSON		. 127					70
MADISON		. 143					78
GALLATIN		. 127					84
MISSOURI MAINSTEM		. 130					76
HEADWATERS MAINSTEM		. 136					79
SMITH-JUDITH-MUSSELSHEL	ь	. 113					71
SUN-TETON-MARIAS		. 157					81
ST. MARY		. 156					95
YELLOWSTONE (MONTANA & WYOM:	ING)	. 123					72
UPPER YELLOWSTONE		. 134		<b>.</b>			80
LOWER YELLOWSTONE (WYOMING	G) .	. 106					59
WIND		. 96					53
SHOSHONE		. 122					65
BIGHORN							57
TONGUE		. 102					
POWDER		. 118					53

### Precipitation

The combined mountain and valley precipitation for May across Montana was 7 percent below average and 35 percent below last year and water year mountain precipitation was 32 percent above average and 1 percent above last year.

West of the Continental Divide, mountain and valley precipitation during May was 6 percent below average and 37 percent below last year and east of the Continental Divide was 7 percent below average and 34 percent below last year. Water year precipitation west of the Continental Divide was 37 percent above average and 1 percent below last year and east of the Continental Divide was 27 percent above average and 3 percent above last year.

	MAY WATER YEAR
RIVER BASIN %	OF AVERAGE % OF AVERAGE
COLUMBIA	94 137
KOOTENAI	90 136
FLATHEAD	97 140
UPPER CLARK FORK	94 130
BITTERROOT	69 141
LOWER CLARK FORK	105 142
MISSOURI	95 125
JEFFERSON	78 125
MADISON	76 134
GALLATIN	97 133
MISSOURI MAINSTEM	118 114
SMITH-JUDITH-MUSSELSHELL	101 123
SUN-TETON-MARIAS	112 123
Milk	107 94
ST. MARY	153 126
YELLOWSTONE	85 126
UPPER YELLOWSTONE	86 136
LOWER YELLOWSTONE (WY & MT).	84 119

### Reservoirs

Major reservoir storage across the state was 3 percent above average and 3 percent above last year.

West of the Continental Divide, reservoirs were 3 percent above average and percent above last year. East of the Continental Divide, reservoirs were 6 percent above average and 11 percent below last year.

RIVER BASIN	olo	OF	CAPA	CITY	g g	OF	AVERAGE
COLUMBIA			103				. 109
KOOTENAI			105				. 109
FLATHEAD			100				. 111
UPPER CLARK FORK			104				. 95
BITTERROOT			123				. 104
LOWER CLARK FORK			116				. 98
MISSOURI			104				. 94
JEFFERSON			91				. 88
MADISON			105				. 105
GALLATIN			106				. 84
MISSOURI MAINSTEM		~ .	97				. 92
SMITH-JUDITH-MUSSELSHELL			123				. 97
SUN-TETON-MARIAS			118				. 94
MILK			115				. 91
ST. MARY			116				. 72

### Reservoirs (continued)

YELLOWSTONE	98	 102
UPPER YELLOWSTONE	122	 99
LOWER YELLOWSTONE	97	 102

### Streamflow

### SEASONAL STREAMFLOW FORECASTS

Seasonal volume streamflow forecasts across Montana are 129 percent above average and 2 percent below last years forecasts.

West of the Continental Divide, streamflows are forecast to be 40 percent above average and 3 percent above last years forecasts. East of the Continental Divide, streamflows are forecast to be 36 percent above average and 2 percent below last years forecasts.

7.	UNE-JULY ORECASTS		JNE-JU	
= -				
RIVER BASIN % OF	F AVERAGE	% OF	LAST	YEAR
COLUMBIA	140		103	
KOOTENAI				
FLATHEAD	137		95	
UPPER CLARK FORK	142		107	
BITTERROOT	142		99	
LOWER CLARK FORK				
MISSOURI	138		99	
JEFFERSON	136		102	
MADISON	147		101	
GALLATIN	134		100	
	134		88	
SMITH-JUDITH-MUSSELSHELL				
SUN-TETON-MARIAS	129		94	
MILK	111		93	
	116		96	
YELLOWSTONE			98	
	139			
LOWER YELLOWSTONE	131		94	

NOTE: The FORECAST AS % OF LAST YEAR column above, is this years forecast as a percent of last years forecast, not of what actually occurred.

Snow melt peaks occurred earlier than normal this year and generally were average to well above average.

Snow melt peak flows in the Columbia River Basin generally occurred during the third week of May; the Missouri River Basin generally occurred during the fourth week of May, except for the Gallatin where peak flows occurred the first week of June; and the Yellowstone snow melt peak flows occurred the first week of June. FOR MORE INFORMATION ON SPECIFIC BASINS, SEE THE INDIVIDUAL BASIN REPORTS THAT FOLLOW.

### Peak Streamflow Forecasts

Snow melt peaks occurred earlier than normal this year and generally were average to well above average.

Snow melt peak flows in the Columbia River Basin generally occurred during the third week of May; the Missouri River Basin generally occurred during the fourth week of May, except for the Gallatin where peak flows occurred the first week of June; and the Yellowstone snow melt peak flows occurred the first week of June. FOR MORE INFORMATION ON SPECIFIC BASINS, SEE THE INDIVIDUAL BASIN REPORTS THAT FOLLOW.

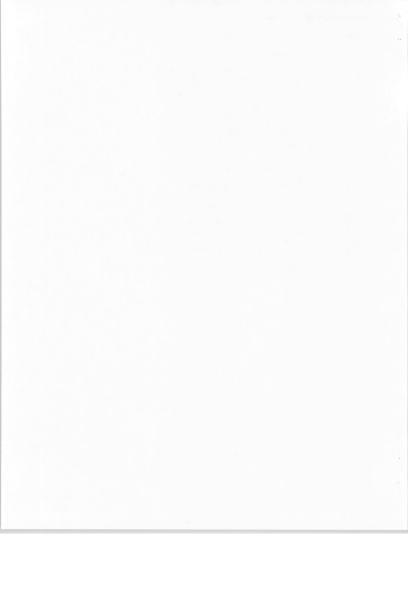
### Surface Water Supply Index

The Surface Water Supply Index (SWSI) is an indicator of surface water supply conditions for the spring and summer months. Water users that rely on mountain precipitation can use the index to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.

	SWSI RATING SURFACE WATER CONDITI	ON
	+3.0 to +4.0 Extremely Wet	
	+2.0 to +3.0 Moderately Wet	
	+1.0 to +2.0 Slightly Wet	
	-1.0 to +1.0 Near Average	
	-1.0 to -2.0 Slightly Dry	
	-2.0 to -3.0 Moderately Dry	
	-3.0 to -4.0 Extremely Dry	
swsi	Basin	
-1.2	Kootenai River at Ft. Steele Canada	
+2.5	Tobacco River	
+2.7	Kootenai Ft. Steele to Libby Dam	
+0.4	Kootenai River below Libby Dam	
+3.0	Fisher River	
+2.7	Yaak River	
+2.6	North Fork Flathead River	
+2.9	Middle FORK Flathead River	
+2.1	South Fork Flathead River	
+2.5	Flathead River at Columbia Falls	
+2.5	Stillwater/Whitefish Rivers	
+2.8	Swan River	
+2.6	Flathead River at Polson	
+1.6	Mission Valley	
+3.2	Little Bitterroot River	
+2.2	Clark Fork River above Rock Creek	
+2.8	Blackfoot River	
+2.5	Clark Fork River above Missoula	
+3.1	Bitterroot River	
+2.7	Clark Fork River below Bitterroot Rive	r
+3.1	Clark Fork River below Flathead River	
+1.1	Beaverhead River	
+1.2	Ruby River	
+2.2	Big Hole River	
+1.7	Boulder River (Jefferson)	
+1.8	Jefferson River	

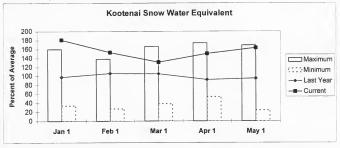
# Surface Water Supply Index (continued)

SWSI	Basin
+2.8	Madison River
+2.6	Gallatin River
+2.3	Missouri River above Canyon Ferry
+2.3	Missouri River below Canyon Ferry
+2.4	Smith River
+2.1	Sun River
+2.0	Teton River
+2.0	Birch/Dupuyer Creeks
+2.4	Marias River
+1.5	Musselshell River
+2.2	Missouri River above Ft. Peck
+1.7	Missouri River below Ft. Peck
+1.8	Milk River
+2.5	Yellowstone River above Livingston
+2.4	Shields River
+1.8	Boulder River (Yellowstone)
+1.3	Stillwater River
+2.0	Rock/Red Lodge Creeks
+2.4	Clarks Fork River
+1.9	Yellowstone River above Bighorn River
+1.7	Bighorn River below Bighorn Lake
-0.6	Little Bighorn River
+1.4	Yellowstone River below Bighorn River
+0.1	Tongue River
+0.1	Powder River



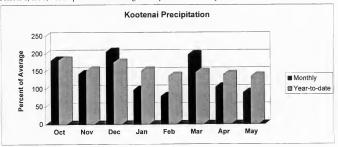
### Kootenai River Basin in Montana

Snowpack conditions on June 1 in the Kootenai River Basin in Montana were well above average and in the Kootenai River Basin in British Columbia, Canada, were well above average. Snow water content for the Kootenai in Montana was 50 percent above average and 7 percent below last year and in British Columbia, Canada, was 57 percent above average and 6 percent below last year.



January maximum swe was established in 1985 and minimum was in 1977; February maximum swe was in 1972 and minimum swe was in 1977, April maximum swe was in 1974 and minimum swe was in 1977, April maximum swe was in 1974 and minimum swe was in 1977, april maximum swe was in 1974 and minimum swe was in 1977; and June maximum swe was in 1974 and minimum swe was in 1975 and minimum swe was in 1976 and minimum swe was in 1977 and minimum swe was in 1976 and minimum swe was in 19

Mountain precipitation during May was 8 percent below average and 56 percent below last year and the valley precipitation was 28 percent below average and percent above last year. Water year precipitation, beginning October 1, 1996, was 36 percent above average and 5 percent below last year.



Lake Koocanusa storage, on the last day of May, was 5 percent above average and 9 percent above last year.

Seasonal streamflows, for the period June through July, are forecast to be 33 percent above average and 2 percent above last years forecasts.

Surface Water Supply Index (SWSI) was -1.2 for the Kootenai River at Ft. Steele (Kootenai in Canada); +2.5 for the Tobacco River; +2.7 for the Kootenai Ft. Steele to Libby Dam; +0.4 for the Kootenai River below Libby Dam; +3.0 for the Fisher River; and +2.7 for the Yaak River.

KOOTENAI RIVER BASIN in Montana Streamflow Forecasts - June 1, 1997

COLUMN AND AND AND AND AND AND AND AND AND AN											
Porecast Point	Forecast Period	90% (1000AF)	70% (1000AF)	- Chance Of :		30% (1000AF)		30-Yr Avg. (1000AF)			
TOBACCO RIVER nr Eureka	JUN-JUL	74	83	90	145	97	106	62			
	JUN-SEP	90	102	110	145	118	130	76			
LIBBY RES Inflow (1,2)	JUN-JUL	-887.0	-278.0		0	276	885	3633			
	JUN-SEP	-1053.0	-330.0		0	328	1051	4626			
FISHER RIVER near Libby	JUN-JUL	73	81	87	124	93	101	70			
	JUN-SEP	94	103	110	128	117	126	86			
YAAK RIVER near Trov	JUN-JUL	172	189	200	133	211	228	151			
	JUN-SEP	205	223	235	135	247	265	174			
KOOTENAI at Leonia (1,2)	JUN-JUL	-1085.0	-340.0			338	1083	4010			
KOUIENAL AL LEONIA (1,2)	JUN-SEP	-1267.0	-396.0		0	394	1265	5091			
	JUN-SEP	-1267.0	-390.0			354	1205	5091			
***************************************			*********		VACOUTIVE	T DYIMD DAGEN		********			
KOOTENAI RIVER BASIN in Montana KOOTENAI RIVER BASIN in Montana											

KOOTENAI RIVER Reservoir Storage (1000		KOOTENAI RIVER BASIN in Montana Watershed Snowpack Analysis - June 1, 1997						
Reservoir	Usable Capacity			Watershed	Number of Data Sites	This Ye	ear as % of	
LAKE KOOCANUSA	5748.0	3351.0	3075.0	3186.0	KOOTENAY in CANADA	8	87	144
					KOOTENAI MAINTSTEM	3	129	179
					TOBACCO	2	61	132
					FISHER	1	0	0
					YAAK	2	73	120
					KOOTENAI in MONTANA	7	93	150
					ab BONNERS FERRY	15	90	147

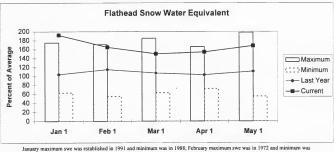
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 The value is natural volume - actual volume may be affected by upstream water management.

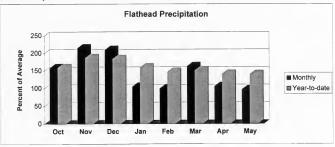
### Flathead River Basin

Snowpack conditions on June 1 for the Flathead River Basin in Montana were well above average. Snow water content for the Flathead in Montana was 71 percent above average and 6 percent below last year.



January maximum swe was established in 1991 and minimum was in 1988; February maximum swe was in 1972 and minimum was in 1977, March maximum swe was in 1972 and minimum was in 1974. The maximum swe was in 1972 and minimum was in 1992; May maximum swe was in 1972 and minimum was in 1992; May maximum swe was in 1974 and minimum was in 1992, and June maximum swe was in 1974 and minimum was in 1992. Average is for the period 1961 through 1990.

Mountain precipitation during May was 5 percent below average and 46 percent below last year and valley precipitation was 16 percent above average and 30 percent below last year. Water year precipitation, beginning October 1, 1996, was 40 percent above average and 1 percent below last year.



Reservoir storage, on the last day of May, was 100 percent of average and 11 percent above last year. Combined Camas reservoir storage was 46 percent above average and 18 percent above last year; the combined Mission Valley reservoir storage was 1 percent above average and 5 percent below last year; Hungry Horse storage was 6 percent below average and 9 percent above last year; and Flathead Lake storage was 10 percent above average and 14 percent above last year.

Seasonal streamflow, for the period June through July, are forecast to be 37 percent above average and 5 percent below last years forecasts.

Snowmelt peak flow for the North Fork Flathead River near Columbia Falls occurred May 17 with an average daily flow of 27,600 cfs and was 30 percent above average; the Middle Fork Flathead River near West Glacier occurred on May 17 with an average daily flow of 31,300 cfs and was 30 percent above average.

Surface Water Supply Index (SWSI) was +2.6 for the North Fork Flathead River; +2.9 for the Middle Fork Flathead River; +2.1 for the South Fork Flathead River; +2.5 for the Silver; +2.5 for the Silver; +2.5 for the Silver; +2.6 for the Silver; +2.6 for the Silver; +2.6 for the Mission Valley; and +3.2 for the Little Bitterroot River.

FLATHEAD RIVER BASIN Streamflow Forecasts - June 1, 1997

***************************************		.<======	Drier ====	Future Co	onditions =	Wetter	=====>>	
Porecast Point	Forecast Period	90% (1000AF)	70% (1000AF)	Chance Of E 50% (Most (1000AF)		30% (1000AF)	10% (1000AF)	   30-Yr Avg.   (1000AF)
NF FLATHEAD nr Columbia Falls	JUN-JUL JUN-SEP	1119 1322	1185 1398	1230	141 139	1275 1502	1341 1578	872 1046
MF FLATHEAD nr West Glacier	JUN-JUL	1170	1212	1240	141	1268	1310	877
	JUN-SEP	1310	1373	1415	138	1457	1520	1027
HUNGRY HORSE Reservoir Inflow (1,2)	JUN-JUL	1098	1288	1375	135	1462	1652	1019
	JUN-SEP	1259	1476	1575	137	1674	1891	1153
FLATHEAD at Columbia Falls (2)	JUN-JUL	3632	3791	3900	137	4009	4168	2840
	JUN-SEP	4209	4412	4550	137	4688	4891	3317
STILLWATER nr Whitefish	JUN-JUL	98	108	115	140	122	132	82
	JUN-SEP	119	134	145	144	156	171	101
WHITEFISH nr Kalispell	JUN-JUL	67	72	76	131	80	85	58
	JUN-SEP	83	90	95	134	100	107	71
SWAN RIVER near Bigfork	JUN-JUL	386	412	430	134	448	474	321
	JUN-SEP	484	517	540	134	563	596	404
FLATHEAD Lake Inflow (1,2)	JUN-JUL	4054	4381	4530	137	4679	5006	3315
	JUN-SEP	4688	5109	5300	138	5491	5912	3850

FLATHEAD Reservoir Storage (100	RIVER BASIS 0 AF) - End				FLATHEAD R Watershed Snowpack A			997
Reservoir	Usable Capacity				Watershed	Number of ta Sites		r as % of Average
CAMAS (4)	45.2	45.3	38.5	31.1	NF FLATHEAD in CANADA	1	144	321
MISSION VALLEY (8)	100.0	69.5	73.0	68.9	NF FLATHEAD in MT.	6	83	179
HUNGRY HORSE	3451.0	2494.0	2281.0	2659.0	MIDDLE FORK FLATHEAD	4	89	160
FLATHEAD LAKE	1791.0	1627.0	1426.0	1480.0	SOUTH FORK FLATHEAD	2	109	159
					STILLWATER-WHITEFISH	5	91	231
					SWAN	4	108	168
					MISSION VALLEY	2	111	175
					LITTLE BITTERROOT-ASHLEY	0	0	0
					JOCKO	4	108	172
					FLATHEAD in MONTANA	20	94	171
					FLATHEAD BASIN	21	95	175

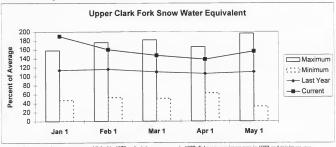
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

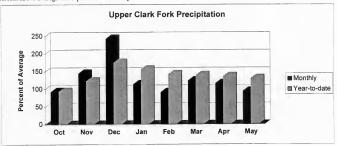
### Upper Clark Fork River Basin

Snowpack conditions on June 1 in the Upper Clark Fork River Basin were well above average. Snow water content was 48 percent above average and 16 percent below last year.



January maximum swe was established in 1978 and minimum swe was in 1977; February maximum was in 1972 and minimum swe was in 1972 and minimum swe was in 1977, April maximum swe was in 1972 and minimum swe was in 1974, April maximum swe was in 1972 and minimum swe was in 1974; May maximum swe was in 1975 and minimum swe was in 1975, and June maximum swe was in 1975 and minimum swe was in 1977, and June maximum swe was in 1975 and minimum swe was in 1976. Average is for the period 1961 through 1990.

Mountain precipitation during May was 10 percent below average and 21 percent below last year and valley precipitation was 22 percent above average and 11 percent above last year. Water year precipitation, beginning October 1, 1996, was 30 percent above average and 5 percent above last year.



Reservoir storage, on the last day of May, was 4 percent above average and 5 percent below last year. Georgetown Lake storage was 2 percent above average and 4 percent below last year, Lower Willow Creek was 14 percent above average and the same as last year; and Nevada Creek storage was 4 percent above average and 9 percent below last year.

Seasonal streamflows, for the period June through July, are forecast to be 42 percent above average and 7 percent above last years forecasts.

Snowmelt peak flow at the Blackfoot near Bonner occurred on May 18 with an average daily flow of 15,700 cfs and was 64 percent above average; and the Clark Fork above Missoula occurred on May 18 with an average daily flow of 26,000 cfs and 55 percent above average.

Surface Water Supply Index (SWSI) was +2.2 for the Clark Fork River above Rock Creek; +2.8 for the Blackfoot River; and +2.5 for the Clark Fork River above Missoula.

UPPER CLARK FORK RIVER BASIN Streamflow Forecasts - June 1, 1997

		<<=====	- Drier	Future Co	nditions =	===== Wette:		
Forecast Point	Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most		30%   (1000AF)	10% (1000AF)	30-Yr Avg.
NARM SPRINGS CK at Anaconda (2)	JUN-JUL JUN-SEP	21 30	26 36	29 40	112 114	32	37 50	26 35
LITTLE BLACKFOOT nr Garrison	JUN-JUL JUN-SEP	5.7 7.6	17.2 21	25 30	74 73	33	44 52	34 41
FLINT CK nr Southern Cross (2)	JUN-JUL JUN-SEP	6.85	8.73 11.2	10.00	125 123	11.27	13.15 17.5	8.00
PLINT CK bl Boulder Ck	JUN-JUL JUN-SEP	26 41	34 53	40	118 120	46	54 79	34
						i		
LOWER WILLOW CK RES Inflow	JUN-JUL JUN-SEP	1.84	2.89 3.57	3.60 4.40	78 80	4.31 5.23	5.36 6.44	4.60 5.50
MF ROCK CREEK nr Philipsburg	JUN-JUL JUN-SEP	46 54	54 64	60 70	143 143	66	75 86	42 49
ROCK CREEK near Clinton	JUN-JUL	165	189	205	124	221	245	165
	JUN-SEP	208	236	255	126	274	302	202
WEVADA CK nr Finn	JUN-JUL JUN-SEP	2.31	3.64 4.72	4.55 5.75	61 63	5.46 6.78	6.79 8.30	7.50 9.20
CLEARWATER nr Clearwater	JUN-JUL JUN-SEP	71 87	82 98	90 105	139 142	98   112	109 123	65 74
BLACKFOOT RIVER near Bonner	JUN-JUL JUN-SEP	608 752	642 793	665 820	161 162	688   847	722 888	414 505
						i		
TLARK FORK ab Milltown	JUN-JUL JUN-SEP	395 525	458 600	500 650	148 147	542 700	605 775	339 442
LARK FORK ab Missoula	JUN-JUL JUN-SEP	996 1278	1097 1392	1165 1470	155 155	1233 1 1548	1334	753

UPPER CLARK Reservoir Storage (10					UPPER CLARK FORK RIVER BASIN . 1997  Macershed Snoppack Analysis - June . 1997  Number This Year as % of						
Reservoir	Usable   Capacity	*** Usab This Year	le Storag Last Year	e *** Avg		of	*******				
GEORGETOWN LAKE	31.0	27.6	28.8	27.0	CLARK FORK ab FLINT CRK	7	70	119			
LOWER WILLOW CREEK	4.9	5.0	5.0	4.4	FLINT CREEK	4	69	146			
NEVADA CREEK	12.6	11.8	13.0	11.4	ROCK CREEK	2	95	193			
					CLARK FORK ab BLACKFOOT	11	74	137			
					BLACKFOOT	9	87	162			
					UPPER CLARK FORK BASIN	18	84	148			

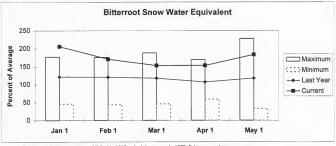
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

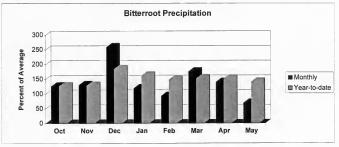
### Bitterroot River Basin

Snowpack conditions on June 1 in the Bitterroot River Basin were well above average. Snow water content was 88 percent above average and 11 percent above last year.



January maximum swe was established in 1965 and minimum swe in 1977; February maximum swe was in 1972 and minimum was in 1977. March maximum swe was in 1972 and minimum swe was in 1973 and primimum swe was in 1973 and minimum swe was in 1973 and minimum swe was in 1973 and minimum swe was in 1974 and minimum swe was in 1974 and minimum swe was in 1987 and 1992. Average is for the period 1961 through 1994 and 1994.

Mountain precipitation during May, was 30 percent below average and 49 percent below last year and valley precipitation was 37 percent below average and 22 percent below last year. Water year precipitation, beginning October 1, 1996, was 41 percent above average and 4 percent below last year.



Reservoir storage, on the last day of May, was 23 percent above average and 4 percent above last year. Painted Rocks Lake storage was 10 percent above average and 2 percent above last year and Como storage was 37 percent above average and 6 percent above last year.

Seasonal streamflows, for the period June through July, are forecast to be 42 percent above average and 1 percent below last years forecasts.

The snowmelt peak flow for the Bitterroot River near Darby occurred on May 17 with an average daily flow of 9,110 cfs and was 46 percent above average.

Surface Water Supply Index (SWSI) was +3.1 for the Bitterroot River.

BITTERROOT RIVER BASIN Streamflow Forecasts - June 1, 1997

		<<=====	Drier	Future C	onditions =	Wetter	*****	
Forecast Point	Forecast			- Chance Of	Exceeding *		*******	
	Period	90%	70%	50% (Most	Probable)	30%	10%	30-Yr Ave
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000A
F BITTERROOT nr Conner (2)	JUN-JUL	76	90	100	133	110	124	75
	JUN-SEP	92	109	120	135	131	148	89
ITTERROOT nr Darby	JUN-JUL	265	304	330	126	l 356	395	263
	JUN-SEP	330	372	400	129	428	470	31:
OCK CK nr Darby (2)	JUN-JUL	4.5	51	l 55	128	l 59	65	4:
-	JUN-SEP	50	56	60	128	64	71	4
KALKAHO CK nr Hamilton	JUN-JUL	35	38	40	138	42	45	2
	JUN-SEP	44	48	50	139	52	56	36
JRNT FORK CK nr Stevensville (2)	JUN-JUL	20	23	l 25	137	l l 27	30	18.2
	JUN-SEP	24	28	30	130	33	36	2
ITTERROOT at Missoula	JUN-JUL	981	1052	1100	150	1148	1219	73
	JUN-SEP	1166	1246	1300	152	1354	1434	85

							1997
Usable   Capacity	*** Usa This Year	ble Storag Last Year	e *** Avg	Watershed	Number of Data Sites		ear as % of Average
31.7	33.3	32.6	30.4	WEST FORK BITTERROOT	2	58	99
34.9	39.5	37.2	28.9	EAST SIDE BITTERROOT	3	74	132
				WEST SIDE BITTERROOT	3	161	257
				BITTERROOT BASIN	7	111	188
	ge (1000 AP) - End  Usable   Capacity	Capacity This Year	Usable   *** Usable Storage   Capacity   This Last   Year Year   Year   23.7   33.3   32.6	ge (1000 AF) - End of May  Usable   ** Usable Storage **  Capacity   This Last	Materihed Snowpack		

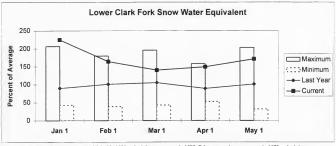
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
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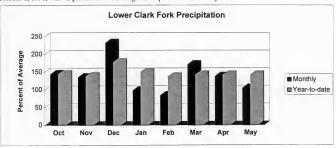
### Lower Clark Fork River Basin

Snowpack conditions on June 1 in the Lower Clark Fork River Basin were well above average. Snow water content was 143 percent above average and 46 percent above last year.



January maximum swe was established in 1985 and minimum swe was in 1977; February maximum swe was in 1972 and minimum swe was in 1973, March maximum swe was in 1973 and minimum was in 1974, and minimum swe was in 1974 and minimum swe was in 1974 and minimum swe was in 1974, maximum swe was in 1972 and minimum swe was in 1974, and minimum swe was in 1974. Average is for the period 1964 through 1990.

Mountain precipitation during May, was 1 percent below average and 29 percent below last year and valley precipitation was 24 percent above average and 19 percent below last year. Water year precipitation, beginning October 1, 1996, was 42 percent above average and 3 percent below last year.



Noxon Rapids storage, on the last day of May, was 16 percent above average and 2 percent below last year.

Seasonal streamflows, for the period June through July, are forecast to be 46 percent above average and 11 percent above last year.

The snow melt peak flow at the Clark Fork at St. Regis occurred on May 18 with an average daily flow of 70,300 cfs and was 76 percent above average.

Surface Water Supply Index (SWSI) was +2.7 for the Clark Fork River below Bitterroot River and +3.1 for the Clark Fork River below Flathead River.

LOWER CLARK FORK RIVER BASIN Streamflow Forecasts - June 1, 1997

		<<=====	Drier	Future C	onditions =	Wette		!			
Forecast Point	Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most	Exceeding * Probable) (% AVG.)	30%   (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)			
CLARK FORK ab Missoula	JUN-JUL JUN-SEP	996 1278	1097 1392	1165	155 155	1233 1548	1334 1662	753 947			
CLARK FORK bl Missoula	JUN-JUL JUN-SEP	2010 2478	2162 2649	2265	152 154	2368 2881	2520 3052	1490 1801			
CLARK FORK at St. Regis (1)	JUN-JUL JUN-SEP	2316 2873	2714 3321	2895 3525	152 152	3076 3729	3474 4177	1903 2313			
CLARK FORK nr Plains (1,2)	JUN-JUL JUN-SEP	6581 8107	7488 9117	7900	145 148	8312 10033	9219 11043	5457 6486			
THOMPSON RIVER nr Thompson Falls	JUN-JUL JUN-SEP	87 119	101 135	110	124 125	119 155	133 171	89 116			
PROSPECT CREEK at Thompson Falls	JUN-JUL JUN-SEP	44 53	52 61	57 67	130 126	62 73	70 81	44 53			
CLARK FK at Whitehorse Rpds (1,2)	JUN-JUL JUN-SEP	7122 8763	8152 9913	8620 10435	144 146	9088	10118 12107	5984 7166			

LOWER CLAR Reservoir Storage (	K FORK RIVER BA				LOWER CLARK : Watershed Snowpack			une 1, 1997  This Year as % of  Last Yr Average  146 243			
Reservoir	Usable   Capacity	*** Usa This Year	ble Stora Last Year	ge *** Avg	Watershed	Number of Data Sites					
NOXON RAPIDS	335.0	323.7	330.6	279.6	LOWER CLARK FORK	6	146	243			
					CLARK FORK BASIN	23	101	176			
					CLARK FK ab PEND ORIELL	8 45	95	169			
					COLUMBIA in MONTANA	49	97	167			
					COLUMBIA RIVER BASIN	57	96	163			

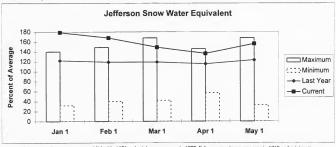
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

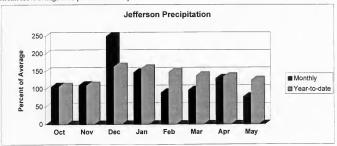
### Jefferson River Basin

Snowpack conditions on June 1 in the Jefferson River Basin were above average. Snow water content was 27 percent above average and 30 percent below last year.



January maximum swe was established in 1976 and minimum swe was in 1977; Erburary maximum swe was in 1969 and minimum was in 1977; April maximum swe was in 1972 and minimum was in 1977; April maximum swe was in 1972 and minimum was in 1977; April maximum swe was in 1972 and minimum was in 1977; April maximum swe was in 1982 and minimum in 1977; Advarga is for the period 1961 through 1990.

Mountain precipitation during May, was 27 percent below average and 44 percent below last year and valley precipitation was 3 percent above average and 32 percent below last year. Water year precipitation, beginning October 1, 1996, was 25 percent above average and 3 percent above last year.



Reservoir storage, on the last day of May, was 9 percent below average and 12 percent below last year. Lima storage was 14 percent below average and 34 percent below last year; Clark Canyon storage was 9 percent below average and 3 percent below last year; and Ruby River storage was 2 percent above average and 1 percent below last year.

Seasonal streamflows, for the period June through July, are forecast to be 36 percent above average and 2 percent above last years forecasts.

The snowmelt peak flow for the Big Hole River near Melrose occurred on June 2 with an average daily flow of 11,100 cfs and was 38 percent above average; the Ruby Reservoir occurred on June 2 with an average daily flow of 1,770 cfs and was 71 percent above average; the Missouri River near Toston should occur the first or second week in June and have an average daily flow well above average.

Surface Water Supply Index (SWSI) was +1.8 for the Jefferson River; +1.1 for the Beaverhead River; +1.2 for the Ruby River; +2.2 for the Big Hole River; and +1.7 for the Boulder River.

JEFFERSON RIVER BASIN Streamflow Forecasts - June 1, 1997

		<<=====	Drier ====	Future Co	onditions =	Wetter	*****>	
Forecast Point	Forecast			Chance Of I	Exceeding * :			
10100000 10110	Period	90%	70%	50% (Most		30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
RED ROCK RIVER near Monida (2)	JUN-JUL	40	49	55	141	61	71	39
RED ROLK RIVER Heat Politica (2)	JUN-SEP	44	56	65	138	74	87	47
BEAVERHEAD RIVER near Grant (2)	JUN-JUL	45	60	   70	135	1 80	95	52
SERVERNEAD RIVER HEAT GIGHT (2)	JUN-SEP	35	74	100	133	127	166	75
BEAVERHEAD RIVER at Barretts (2)	JUN-JUL	63	79	l 90	123	101	117	73
	JUN-SEP	89	113	130	125	147	171	104
RUBY RIVER near Alder	JUN-JUL	28	40	48	107	l 56	6.8	45
	JUN-SEP	42	57	68	112	79	94	61
BIG HOLE RIVER near Melrose	JUN-JUL	434	473	500	143	527	566	349
	JUN-SEP	428	474	505	124	536	582	406
BOULDER RIVER near Boulder	JUN-JUL	42	50	55	138	60	68	4.0
	JUN-SEP	48	58	65	141	72	82	46
WILLOW CREEK near Harrison	JUN-JUL	8.9	12.2	14.5	134	16.8	20	10.8
	JUN-SEP	9.5	14.3	17.5	135	21	26	13.0
JEFFERSON RIVER near Three Forks (	2) JUN-JUL	488	567	620	135	673	752	459
	JUN-SEP	567	676	750	136	824	933	551

JEFFERSON Reservoir Storage (100				ON RIVER BASI k Analysis -		1997			
Reservoir	Usable   Capacity	*** Usa This Year	ble Stora Last Year	ge *** Avg	Watershed		Number of Data Sites		ar as % of Average
LIMA	84.0	55.2	84.1	64.2	BEAVERHEAD		8	71	138
CLARK CANYON	255.6	149.6	154.8	165.3	RUBY		4	62	124
RUBY RIVER	38.8	38.5	38.8	37.9	BIGHOLE		8	73	129
					BOULDER		3	77	100
					JEFFERSON RIVER	BASIN	18	70	127

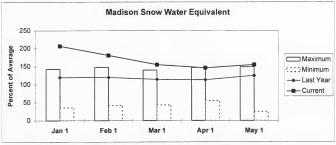
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

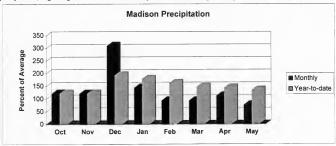
### Madison River Basin

Snowpack conditions on June 1 in the Madison River Basin were well above average. Snow water content was 43 percent above average and 22 percent below last year.



January maximum swe was established in 1971 and minimum swe was in 1977, February maximum swe was in 1969 and minimum was in 1977, Merhunary maximum swe was in 1974 and minimum was in 1977, April maximum swe was in 1974 and minimum was in 1977, May maximum swe was in 1974 and minimum was in 1977, and June maximum swe was in 1936 and minimum was in 1977, and June maximum swe was in 1995 and minimum in 1987. Average is for the period 1961 through 1990.

Mountain and valley precipitation was 27 percent below average and 63 percent below last year. Water year precipitation, beginning October 1, 1996, was 35 percent above average and 9 percent above last year.



Reservoir storage, on the last day of May, was 5 percent above average and 5 percent above last year. Ennis Lake storage was 8 percent below average and 7 percent below last year and Hebgen Lake storage was 7 percent above average and 6 percent above last year.

Seasonal streamflows, for the period June through July, are forecast to be 47 percent above average and 1 percent above last years forecasts.

The snowmelt peak flow into Hebgen Reservoir occurred on May 24 with an average daily flow of 6,574 cfs.

Surface Water Supply Index (SWSI) was +2.8 for the Madison River.

MADISON RIVER BASIN Streamflow Forecasts - June 1, 1997

***********************								
		<< ====================================	Drier ====	== Future O	onditions =	Wetter	====>>	
							1	
Forecast Point	Forecast				Exceeding *			
	Period	90%	70%	50% (Most	Probable)	30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
*************************				*********	**********			
MADISON RIVER near Grayling (2)	JUN-JUL	258	274	285	143	296	312	200
	JUN-SEP	401	424	440	143	456	479	307
						1		
MADISON RIVER near McAllister (2)	JUN-JUL	499	530	550	149	570	601	369
	JUN-SEP	726	764	790	147	816	854	538
				i		i		

MADIS Reservoir Storage (	ON RIVER BASIN 1000 AF) - End	of May		MADIS Watershed Snowpa	N RIVER BASI k Analysis		1997	
Reservoir	Usable   Capacity	*** Usa This Year	ble Storag Last Year	ge *** Avg	Watershed	Number of Data Sites		ar as % of Average
ENNIS LAKE	41.0	32.8	35.1	35.8	MADISON abv HEBGEN LAI	E 4	94	180
HEBGEN LAKE	377.5	330.5	312.0	309.8	MADISON blw HEBGEN LAI	Œ 6	70	126
					MADISON RIVER BASIN	10	78	143

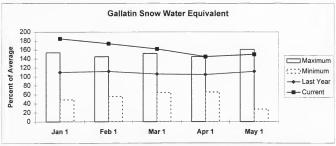
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 The value is natural volume - actual volume may be affected by upstream water management.

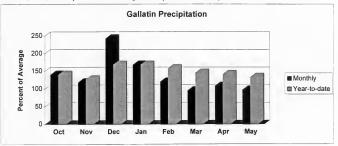
### Gallatin River Basin

Snowpack conditions on June 1 in the Gallatin River Basin were above average. Snow water content was 27 percent above average and 16 percent below last year.



January maximum swe was established in 1968 and minimum swe was in 1966, February maximum swe was in 1965 and minimum was in 1981, March maximum swe was in 1965 and minimum was in 1974 and minimum was in 1974 and minimum was in 1974 and minimum swa in 1974 and minimum swa in 1974 and minimum swa was in 1976 and minimum swa was in 1987, and June maximum swa was in 1976 and 1976

Mountain precipitation during May, was 5 percent below average and 40 percent below last year and valley precipitation was 34 percent above average and 3 percent below last year. Water year precipitation, beginning October 1, 1996, was 33 percent above average and 13 percent above last year.



Middle Creek storage, on the last day of May, was 6 percent above average and 16 percent below last year. Note: Middle Creek storage was increased by 2,200 acre-feet during the fall of 1995, therefore the percent of average is reflecting the new capacity with averages prior to the additional storage.

Seasonal streamflows, for the period June through July, are forecast to be 34 percent above average and is the same as last years forecasts.

The snowmelt peak flow for the Gallatin River near Gallatin Gateway occurred on June 2 with the average daily flow of 7,500 cfs and was 39 percent above average and for the Gallatin River near Logan occurred on June 3 with an average daily flow of 8,590 cfs and was 54 percent above average.

Surface Water Supply Index (SWSI) was +2.6 for the Gallatin River.

GALLATIN RIVER BASIN Streamflow Forecasts - June 1, 1997

Forecast Point	Forecast Period		70% (1000AF)	- Chance Of	Exceeding *	30% (1000AF)		30-Yr Avg. (1000AF)
GALLATIN RIVER near Gateway	JUN-JUL	355	376	390	133	404	425	294
	JUN-SEP	454	479	495	133	511	536	371
E & W FK HYALITE CREEK near Bozeman	JUN-JUL	16.5	18.6	20	125	21	24	16.0
	JUN-SEP	19.9	22	24	124	26	28	19.3
HYALITE CREEK near Bozeman (2)	JUN-JUL	23	25	27	123	29	32	22
	JUN-SEP	30	33	35	125	37	40	28

GALLATIN Reservoir Storage (10)	GALLATIN RIVER BASIN   Watershed Snowpack Analysis - June 1, 1997							
Reservoir		*** Usab This Year	le Storage Last Year	Avg	Watershed	Number of Data Sites	This Yea: Last Yr	r as % of Average
MIDDLE CREEK	10.2	7.4	8.8	7.0	UPPER GALLATIN	3	73	128
					HYALITE	2	86	126
					BRIDGER	3	105	125
					GALLATIN RIVER BASIN	8	84	127
					MISSOURI HEADWATERS	30	79	136

608

552

The average is computed for the 1961-1990 base period.

GALLATIN RIVER at Logan (2)

JUN-JUL

JUN-SEP

308

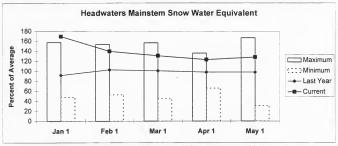
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<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
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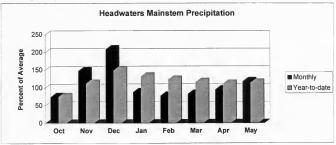
### Missouri Mainstem River Basin

Snowpack conditions in the Missouri Mainstem were above average. Snow water content in the Headwaters Mainstem was 8 percent above average and 40 percent below last year; in the Smith-Judith-Musselshell was 13 percent above average and 29 percent below last year; and in the Sun-Teton-Marias was 57 percent above average and 19 percent below last year.



January maximum swe was established in 1978 and minimum swe in 1977; February maximum swe was in 1972 and minimum swe was in 1977, and maximum swe was in 1974 and minimum swe was in 1976 and minimum swe was in 1976. Average is for the period 1961 through 1990.

Mountain precipitation during May, was 17 percent above average and 6 percent below last year and valley precipitation was 9 percent above average and 9 percent below last year. Water year precipitation, beginning October 1, 1996, was 14 percent above average and 4 percent above last year.



Reservoir storage, on the last day of May, was 3 percent below average and 8 percent below last year. Canyon Ferry Lake storage was 4 percent above average and 9 percent below last year (this reservoir is still filling from the very high inflows coming from the Jefferson, Madison, and Gallatin Rivers); Helena Valley storage was 29 percent above average and 9 percent below last year; Lake Helena storage was 8 percent above average and 2 percent above average was 4 percent above average and 1 percent above last year; Holter Lake storage was 4 percent above average and 1 percent above average and 1 percent above average and 2 percent above average and 2 percent above average and 1 percent above average and 2 percent above average and 1 percent above average and 2 percent above average above average and 2 percent above average above average and 2 percent above average a

Seasonal streamflows, for the period June through July, are forecast to be 34 percent above average and 12 percent below last year.

The snowmelt peak flow for the Missouri River near Toston should occur the first or second week of June.

Surface Water Supply Index (SWSI) was +2.3 for the Missouri River above Canyon Ferry; +2.3 for the Missouri River below Canyon Ferry; +2.2 for the Missouri River above Ft. Peck; and +1.7 for the Missouri River below Ft. Peck.

MISSOURI MAINSTEM RIVER BASIN Streamflow Forecasts - June 1, 1997

		<<======	Drier ====	= Future Co	nditions ==	Wetter	====>>	
Forecast Point	Forecast			Chance Of E	exceeding * -			
	Period	90% (1000AF)	70% (1000AF)	50% (Most (1000AF)	Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg (1000AF
MISSOURI RIVER at Toston (2)	JUN-JUL	1259	1396	1490	133	1584	1721	1120
	JUN-SEP	1678	1855	1975	135	2095	2272	1461
PRICKLY PEAR CREEK near Clancy	JUN-JUL	2.1	6.2	9.0	75	11.8	15.9	12.0
	JUN-SEP	4.4	9.5	13.0	82	16.5	22	15.8
SUN RIVER at Gibson Dam (2)	JUN-JUL	277	317	345	123	373	413	281
	JUN-SEP	335	377	405	123	433	475	329
MISSOURI RIVER at Fort Benton (2)	JUN-JUL	1591	1939	2175	130	2411	2759	1671
	JUN-SEP	2220	2655	2950	130	3245	3680	2262
MARIAS RIVER near Shelby (2)	JUN-JUL	213	277	320	136	363	427	236
	JUN-SEP	272	333	375	135	417	478	277
MISSOURI RIVER at Virgelle (2)	JUN-JUL	1655	2218	2600	134	2982	3545	1942
	JUN-SEP	2489	3091	3500	137	3909	4511	2564
MISSOURI RIVER near Landusky (2)	JUN-JUL	1810	2405	2810	133	3215	3810	2109
	JUN-SEP	2787	3361	3750	134	4139	4713	2792
HISSOURI RIVER below Fort Peck (2)	JUN-JUL	1806	2458	2900	140	3342	3994	2072
	JUN-SEP	2463	3066	3475	140	3884	4487	2490
AKE SAKAKAWEA Inflow (2)	JUN-JUL	6229	6986	7500	135	8014	8771	5540
	JUN-SEP	7618	8904	9575	137	10246	11322	6989

MISSOURI MAI Reservoir Storage (10	MISSOURI MAINSTEM RIVER BASIN Watershed Snowpack Analysis - June 1, 1997							
Reservoir	Usable Capacity	*** Us This Year	able Stora Last Year	ge *** Avg	Watershed	Number of ata Sites		r as % of Average
CANYON FERRY LAKE	2043.0	1588.0	1741.0	1659.0	MISSOURI MAINSTEM	6	60	108
HELENA VALLEY	9.2	9.0	9.9	7.3	SMITH-JUDITH-MUSSELSHELL	6	71	113
LAKE HELENA	10.4	10.9	10.7	10.1	SUN-TETON-MARIAS	6	81	157
HAUSER & HELENA	61.9	63.1	62.5	60.9	MISSOURI abv FT PECK	17	73	132
HOLTER LAKE	81.9	81.4	80.6	78.0	MILK RIVER BASIN	5	0	0
FORT PECK LAKE (MAF)	18.9	17.0	17.3	15.5	MISSOURI MAINSTEM BASIN	21	76	130

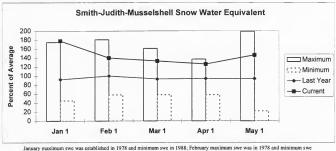
<sup>• 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
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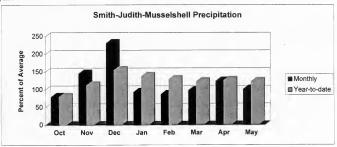
## Smith-Judith-Musselshell River Basins

Snowpack conditions on June 1 in the Smith-Judith-Musselshell River Basins were above average. Snow water content in the Smith River Basin was 17 percent above average and 29 percent below last year, and in the Judith River Basin was 20 percent above average and 18 percent below last year.



January maximum swe was established in 1978 and minimum swe in 1988; February maximum swe was in 1978 and minimum swe was in 1978 and minimum swe was in 1978 and minimum swe was in 1979 and minimum swe was in 1970 and minimum swe was in 1970 and minimum swe was in 1987, and June maximum swe was in 1982 and minimum swe was in 1982, are the same that the same swe was in 1982 and minimum swe was in 1982. Average is for the period 1961 through 1990.

Mountain and valley precipitation during May in the Smith River was 5 percent above average and 19 percent below last year; the Judith River was 5 percent below average and 12 percent below last year; and the Musselshell River was 16 percent above average and 26 percent below last year. Water year precipitation for the Smith-Judith-Musselshell, beginning October 1, 1996, was 23 percent above average and 7 percent above last year.



Reservoir storage, on the last day of May, was 23 percent above average and 3 percent below last year. Smith River storage was 9 percent above average and 1 percent below last year; Bair storage was 10 percent below average and 10 percent below last year; Martinsdale storage was 26 percent above average and 12 percent below last year; and Deadman's Basin was 28 percent above average and 1 percent above last year.

Seasonal streamflows, for the period June through July, are forecast to be 47 percent above average and 7 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +2.4 for the Smith River and +1.5 for the Musselshell River.

SMITH-JUDITH-MUSSELSHELL RIVER BASINS Streamflow Forecasts - June 1, 1997

		<<=====	Drier ====	== Future Co	onditions =	Wetter	****>>	
Forecast Point	Forecast				Exceeding *			
	Period	90% (1000AF)	70% (1000AF)	50% (Most (1000AF)	Probable) (% AVG.)	30% (1000AF)	10%   (1000AF)	30-Yr Avg. (1000AF)
SHEEP CREEK nr White Sulphur Springs	JUN-JUL	9.0	11.4	13.0	130	14.6	17.0	10.0
	JUN-SEP	12.5	15.2	17.0	132	18.8	22	12.9
SMITH RIVER blw Eagle Creek	JUN-JUL	46	57	65	126	73	84	52
	JUN-SEP	66	83	95	131	107	124	73
NF MUSSELSHELL near Delpine	JUN-JUL	1.79	2.45	2.90	126	3.35	4.01	2.30
	JUN-SEP	2.27	3.18	3.80	123	4.42	5.33	3.10
SF MUSSELSHELL abv Martinsdale	JUN-JUL	11.0	21	28	108	35	45	26
	JUN-SEP	13.1	24	32	110	40	51	29
=======================================								********

SMITH-JUDITH-MU: Reservoir Storage (1)			SMITH-JUDITH-MUSSELSHELL RIVER BASINS   Watershed Snowpack Analysis - June 1, 1997					
Reservoir	Usable   Capacity	*** Usal This Year	le Storac Last Year	ge *** Avg	Watershed	Number of Data Sites	This Yea	r as % of Average
SMITH RIVER	10.6	11.4	11.5	10.5	SMITH	4	71	117
NEWLAN CREEK		NO REPOR	RT		JUDITH	3	82	120
BAIR	7.0	5.6	6.2	6.2	MUSSELSHELL	1	0	0
MARTINSDALE	23.1	21.7	24.8	17.2	SMITH-JUDITH-MUSSELSHEL	L 6	71	113
DEADMAN'S BASIN	72.2	70.5	69.7	55.1				

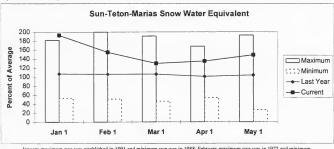
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 The value is natural volume - actual volume may be affected by upstream water management.

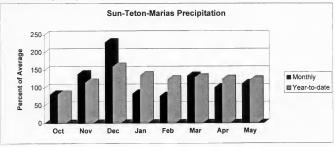
#### Sun-Teton-Marias River Basins

Snowpack conditions in the Sun-Teton-Marias River Basins were well above average. Snow water content for the Sun River Basin was 33 percent above average and 25 percent below last year; the Teton River Basin was 44 percent above average and 25 percent below last year; and the Marias River Basin was 65 percent above average and 17 percent below last year.



January maximum swe was established in 1991 and minimum swe was in 1988; February maximum swe was in 1972 and minimum swe was in 1977. Maxeh maximum swe was in 1972 and minimum swe was in 1984; April maximum swe was in 1972 and minimum swe was in 1984. May maximum swe was in 1972 and minimum swe was in 1977; and June maximum was in 1982 and minimum swe was in 1982. Average is for the period 1961 through 1990.

Mountain and valley precipitation for May in the Sun River, was 2 percent below average and 28 percent above last year; in the Teton River was 2 percent above average and 10 percent below last year, and in the Marias River was 25 percent above average and 16 percent below last year. Water year precipitation for all three basins, beginning October 1, 1996, was 23 percent above average and 1 percent below last year.



Reservoir storage, on the last day of May, was 18 percent above average and 6 percent below last year. Gibson storage was 3 percent below average and 34 percent above last year; Pishkun storage was 2 percent above average and 34 percent below last year; Willow Creek storage was 33 percent below average and 37 percent below last year; Lower Two Medicine Lake storage was 11 percent above average and 2 percent below last year; Four Horns Lake storage was 5 percent below average and 8 percent above last year; Swift storage was 59 percent below average and 61 percent below last year. Lake Frances storage was 7 percent below average and 23 percent below last year; and Lake Elwell (Tiber) storage was 29 percent above average and 1 percent below last year.

Seasonal streamflows, for the period June through July, are forecast to be 29 percent above average and 6 percent below last years forecasts.

Surface Water Supply Index (SWSI) was +2.1 for the Sun River; +2.0 for the Teton River; +2.4 for the Marias River; and +2.0 for the Birch/Dupuyer Creeks.

SUN-TETON-MARIAS RIVER BASINS Streamflow Forecasts - June 1, 1997

				cane z, zz.				
		<<======	Drier ====	== Future Co	onditions =	Wetter		!
Forecast Point	Forecast							
	Period	90% (1000AF)	70% (1000AF)		Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SUN RIVER at Gibson Dam (2)	JUN-JUL	277	317	345	123	373	413	281
	JUN-SEP	335	377	4.05	123	433	475	329
TWO MEDICINE RIVER near Browning (2)	JUN-JUL	71	109	135	129	161	199	105
	JUN-SEP	84	123	150	128	177	216	117
BADGER CREEK near Browning (2)	JUN-JUL	4.9	65	75	132	85	101	57
	JUN-SEP	73	8.9	100	135	111	127	74
SWIFT RESERVOIR Inflow near Dupuyer	JUN-JUL	27	38	45	118	52	63	38
	JUN-SEP	40	52	60	120	68	80	50
DUPUYER CREEK near Valier	JUN-JUL	0.55	6.18	10.00	132	13.82	19.45	7.60
	JUN-SEP	2.06	8.28	12.50	132	16.72	22.94	9.50
CUT BANK CREEK at Cut Bank	JUN-JUL	50	59	65	138	71	80	47
	JUN-SEP	60	6.9	75	134	81	90	56
MARIAS RIVER near Shelby (2)	JUN-JUL	213	277	320	136	363	427	236
	JUN-SEP	272	333	375	135	417	478	277

	SUN-TETON-MARI Reservoir Storage (1000					SUN-TETON-MARIAS RIVER BASINS Watershed Snowpack Analysis - June 1, 1997					
Reservoir		Usable Capacity	*** Usab This Year	le Storage Last Year	e *** Avg	Watershed	Number of Data Sites	This Yea	r as % of Average		
GIBSON		99.1	87.3	85.4	90.1	SUN	2	75	133		
PISHKUN		32.0	30.7	46.3	30.1	TETON	3	75	134		
WILLOW CREEK		32.2	19.0	30.1	28.5	MARIAS	3	83	165		
LOWER TWO ME	DICINE LAKE	11.9	12.3	12.6	11.1	SUN-TETON-MARIAS	6	81	157		
FOUR HORNS L	AKE	19.2	12.3	11.4	13.0						
SWIFT		30.0	26.2	26.2	24.8						
LAKE FRANCES		112.0	101.0	104.8	87.4						
LAKE ELWELL	(TIBER)	1347.0	894.1	901.3	690.8						

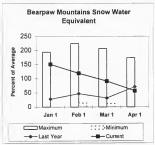
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

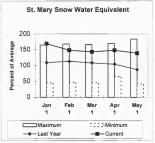
The average is computed for the 1961-1990 base period.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

### St. Mary and Milk River Basins

Snowpack conditions in the St. Mary River Basin on June 1 was well above average and in the Milk River Basin the snowpack has melted out. Snow water content in the St. Mary was 56 percent above average and 5 percent below last year.

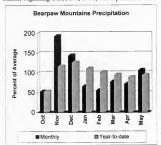


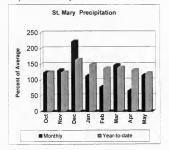


Bearpaw - January maximum swe was established in 1978 and minimum swe was in 1981; February maximum swe was 1978 and minimum swe in 1973. March maximum swe was 1981; April maximum swe was 1981; April maximum swe was 1978 and minimum swe in 1981; April maximum swe was in 1975 and the minimum swe was 1975 and the minimum has occurred in several years. Average is for the period 1961 through 1996.

St. May. January maximum swe was established in 1991 and minimum swe was in 1988; February maximum swe was in 1972 and minimum swe was in 1974. April maximum swe was in 1974 and minimum swe was in 1974. April maximum swe was in 1974 and minimum swe was in 1974 and minimum swe was in 1974 and minimum swe was in 1982; May maximum swe was in 1982 and minimum swe was in 1987, and June maximum swe was in 1984 and minimum swe was in 1987 and minimum swe was in 1987 and June maximum swe was in 1987 and minimum swe was in 1987 and June maximum swe was in 1987 and minimum swe was in 1987 and

Mountain and valley precipitation for May in the St. Mary River, was 15 percent above average and 21 percent below last year and in the Milk River was 7 percent above average and 13 percent above last year. Water year precipitation for both basins, beginning October 1, 1996, was 2 percent above average and 22 percent below last year.





Reservoir storage, on the last day of May, was 13 percent above average and 13 percent below last year. Lake Sherburne storage was 16 percent above average and 8 percent below last year; Fresno storage was 13 percent above average and 3 percent below last year; Beaver Creek storage was 21 percent above average and 5 percent below last year; and Nelson storage was 11 percent above average and 19 percent below last year.

Seasonal streamflows for the St. Mary Basin, for the period June through July, are forecast to be 16 percent above average and 4 percent below last years forecasts. Seasonal streamflows for the Milk River Basin, for the period June through July, are forecast to be 11 percent above average and 7 percent below last years forecasts.

Surface Water Supply Index (SWSI) was +1.8 for the Milk River.

ST. MARY and MILK RIVER BASINS Streamflow Forecasts - June 1, 1997

		DUECUMERO		ounc z, z,				
Forecast Point	Forecast Period		70% (1000AF)	- Chance Of	Exceeding * Probable)	30% (1000AF)		30-Yr Avg. (1000AF)
SWIFTCURRENT CREEK at Sherburne (2)	JUN-JUL JUN-SEP	60 79	67 87	71 92	111 114	75 97	82 105	64 81
ST. MARY RIVER near Babb	JUN-JUL JUN-SEP	294 365	306 386	. 315 400	121 122	324 414	336 435	261 329
ST. MARY RIVER at US/CAN Border (2)	JUN-JUL JUN-SEP	303 389	325 420	340 440	114 117	355 460	377 491	298 376
MILK RIVER at Western Crossing	JUN-JUL JUN-SEP	8.5 10.8	12.2 15.4	14.7 18.5	123 123	17.2 22	21 26	12.0 15.0
MILK RIVER at Eastern Crossing (2)	JUN-JUL JUN-SEP	7.9 3.7	14.8 18.5	19.5	122 119	24 39	31 53	16.0 24
BEAVER CREEK near Havre	JUN-JUL	0.12	0.36	1.30	33	2.24	3.62	4.00

ST. MARY and I Reservoir Storage (10)					ST. MARY and MILK RIVER BASINS Watershed Snowpack Analysis - June 1, 1997						
Reservoir	Usable   Capacity	*** Usa This Year	ble Storag Last Year	e *** Avg	Watershed	Number of Data Sites		r as % of Average			
LAKE SHERBURNE	64.3	37.1	51.8	32.0	ST. MARY	2	95	156			
FRESNO	127.0	100.9	103.5	89.1	BEARPAW MOUNTAINS	5	0	0			
BEAVER CREEK	3.5	3.5	3.7	2.9	CYPRESS HILLS, CANADA	0	0	0			
NELSON	66.8	47.3	58.2	42.6	MILK RIVER BASIN	5	0	0			
					ST. MARY & MILK BASINS	7	95	152			

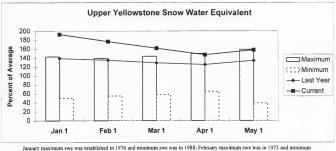
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 The value is natural volume - actual volume may be affected by upstream water management.

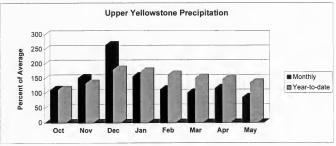
#### Upper Yellowstone River Basin

Snowpack conditions on June 1 in the Upper Yellowstone River Basin were well above average. Snow water content was 34 percent above average and 20 percent below last year.



January maximum swe was established in 1976 and minimum swe was in 1932; Foreinary maximum swe was in 1972, and minimum swe was in 1974 and minimum swe was in 1974 and minimum swe was in 1987 and 1974 and minimum swe was in 1981 (May maximum swe was in 1981) and minimum swe was in 1987, and June maximum swe was in 1982 and minimum swe was in 1983 and 1984. Average is for the period 1964 through 1990.

Mountain precipitation for May, was 17 percent below average and 45 percent below last year and valley precipitation was 3 percent above average and 24 percent below last year. Water year precipitation, beginning October 1, 1996, was 36 percent above average and 3 percent above last year.



Reservoir storage, on the last day of May, was 22 percent above average and I percent below last year. Mystic Lake storage was 5 percent above average and 87 percent above last year and Cooney storage was 26 percent above average and 10 percent below last year.

Seasonal streamflows, for the period June through July, are forecast to be 39 percent above average and 2 percent above last years forecasts.

The snowmelt peak flow for the Yellowstone River at Corwin Springs should occur the second week in June; the Yellowstone River at Livingston should occur the second week in June; the Clarks Fork River near Belfry should occur the second week in June; and the Yellowstone River at Billings should occur the second week in June.

Surface Water Supply Index (SWSI) was +1.9 for the Yellowstone River above Bighorn River; +2.5 for the Yellowstone River above Livingston; +2.4 for the Shields River; +1.8 for the Boulder River; +1.3 for the Stillwater River; +2.0 for the Rock/Red Lodge Creeks; and +2.4 for the Clarks Fork River.

UPPER YELLOWSTONE RIVER BASIN Streamflow Forecasts - June 1, 1997

***************************************			Defen	- Puturo Co	anditions -	Wetter		
			Dilei	rucule co	Judicions =	Meccei	,	! 
Forecast Point	Forecast	******		- Chance Of 1	Exceeding *		******	İ
	Period	90%	70%	50% (Most	Probable)	30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)		(% AVG.)	(1000AF)	(1000AF)	(1000AF)
YELLOWSTONE at Lake Outlet	JUN-JUL	535	579	610	129	641	685	472
IEDEOWSTONE at Dake Outlet	JUN-SEP	803	858	895	130	932	987	691
YELLOWSTONE RIVER at Corwin Springs	JUN-JUL	1473	1543	   1590	138	1637	1707	1156
IBLLOWSTONE RIVER at Corwin Springs	JUN-SEP	1889	1985	2050	138	2115	2211	1484
	JUN-SEP	1003	1905	2030	130	2113	2211	1404
YELLOWSTONE RIVER near Livingston	JUN-JUL	1705	1800	1865	140	1930	2025	1335
	JUN-SEP	2206	2324	2405	140	2486	2604	1721
SHIELDS RIVER near Livingston	JUN-JUL	87	104	115	149	126	143	77
	JUN-SEP	108	127	140	147	153	172	95
BOULDER RIVER at Big Timber	JUN-JUL	298	320	l l 335	132	I 350	372	253
2002000 1121011 22 029 12-2-1	JUN-SEP	327	356	375	133	394	423	282
WEST ROSEBUD CREEK near Roscoe (2)	JUN-JUL	60	65	l 68	133	l 72	77	51
	JUN-SEP	82	88	92	133	96	102	69
STILLWATER RIVER nr Absarokee (2)	JUN-JUL	434	464	485	128	506	536	380
	JUN-SEP	527	571	600	126	629	673	475
CLARKS FORK RIVER near Belfry	JUN-JUL	427	468	495	125	522	563	395
	JUN-SEP	487	534	565	125	596	643	453
RED LODGE CREEK blw Coonev Res (2)	JUN-JUL	19.5	26	l   30	125	34	41	24
	JUN-SEP	27	37	44	126	51	61	35
YELLOWSTONE RIVER at Billings (2)	JUN-JUL	3191	3464	3650	145	3836	4109	2525
	JUN-SEP	4017	4364	4600	146	4836	5183	3159
TINDED WELL ONCE	OM DAND	DECTM		1	Tropped	VELT ON CHOOME I	TIPE DAGTE	

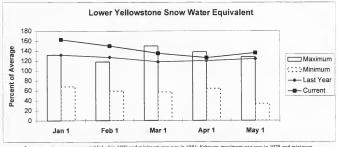
UPPER YELLOWS Reservoir Storage (1000					UPPER YELLOWST Watershed Snowpack A			997
Reservoir	Usable   Capacity	*** Usab This Year	le Storage Last Year	Avg	Watershed	Number of ta Sites	This Year Last Yr	
MYSTIC LAKE	21.0	5.8	3.1	5.5	YELLOWSTONE ab LIVINGSTON	10	78	140
COONEY	27.4	25.2	28.1	20.0	SHIELDS	5	107	143
					BOULDER-STILLWATER	3	75	115
					CLARK'S FORK-ROCK CREEK	9	79	132
					UPPER YELLOWSTONE RIVER	23	80	134

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table. The average is computed for the 1961-1990 base period.

The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 The value is natural volume - actual volume may be affected by upstream water management.

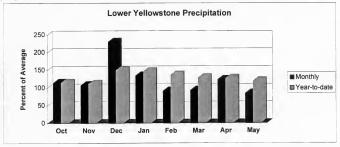
### Lower Yellowstone River Basin

Snowpack conditions on June 1 in the Lower Yellowstone River Basin were average. Snow water content was 6 percent above average and 41 percent below last year.



January maximum swe was established in 1996 and minimum swe was in 1981; February maximum swe was in 1978 and minimum swe was in 1981; March maximum swe was in 1986 and minimum swe was in 1987, April maximum swe was in 1986 and minimum swe was in 1981; and June maximum swe was in 1986 and minimum swe was in 1981; and June maximum swe was in 1994 and minimum swe was in 1981; and June maximum swe was in 1995 and minimum swe was in 1994.

Mountain and valley precipitation for May, was 16 percent below average and 35 percent below last year. Water year precipitation, beginning October 1, 1996, was 19 percent above average and 3 percent below last year.



Reservoir storage, on the last day of May, was 3 percent below average and 2 percent above last year. Bighorn Lake storage was 1 percent below average and 3 percent above last year and the Tongue River storage was 35 percent below average and 15 percent below last year.

Seasonal streamflows, for the period June through July, are forecast to be 31 percent above average and 6 percent below last years forecasts.

Surface Water Supply Index (SWSI) was +1.4 for the Yellowstone River below Bighorn River; +1.7 for the Bighorn River below Bighorn Lake; -0.6 for the Little Bighorn River; +0.1 for the Tongue River; and +0.1 for the Powder River.

LOWER YELLOWSTONE RIVER BASIN Streamflow Forecasts - June 1, 1997

							*********	
		<<======	Drier ====	== Future Co	onditions =	Wetter	====>>	1
Forecast Point	Forecast			Ch 06 F				
Forecast Point	Period	90%	70%	Chance of a		30%	10%	30-Yr Avg.
	Period	(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
		(1000AF)	(IOUOME)	(1000AF)	(* AVG.)	(1000AF)	(IOUUAF)	(1000AF)
YELLOWSTONE RIVER at Billings (2)	JUN-JUL	3191	3464	3650	145	3836	4109	2525
	JUN-SEP	4017	4364	4600	146	4836	5183	3159
BIGHORN RIVER nr St. Xavier (2)	JUN-JUL	996	1153	1260	110	1367	1524	1141
	JUN-SEP	1113	1314	1450	111	1586	1787	1306
LITTLE BIGHORN RIVER or Hardin	JUN-JUL	30	45	l 55	73			
LITTLE BIGHORN RIVER OF HARdin	JUN-JUL JUN-SEP		45 59	1 72		65	80	75
	JUN-SEP	39	59	72	78	85	105	92
TONGUE RIVER stateline nr Decker (2)	JUN-JUL	59	83	100	74	117	141	135
	JUN-SEP	8.0	110	130	81	150	180	161
				I		I		
YELLOWSTONE RIVER at Miles City (2)	JUN-JUL	4068	4712	5150	137	5588	6232	3753
	JUN-SEP	5326	5795	6350	137	6905	7085	4631
POWDER RIVER at Moorhead	JUN-JUL	28	50	64	55	l 78	100	
POWDER RIVER at Moornead	JUN-SEP	33	64	1 86				116
	JUN-SEP	3.3	64	86	62	108	139	138
POWDER RIVER near Locate	JUN-JUL	15.0	51	76	5.5	101	137	138
	JUN-SEP	43	67	100	62	133	182	162
				i		i		202
YELLOWSTONE RIVER nr Sidney (2)	JUN-JUL	3931	4865	5500	140	6135	7069	3928
	JUN-SEP	5573	5973	6750	142	7527	7668	4763

LOWER YEI Reservoir Storage	LOWSTONE RIVER E (1000 AF) - End				LOWER YELLOWSTONE RIVER BASIN   Watershed Snowpack Analysis - June 1, 1997					
Reservoir	Usable   Capacity	*** Us This Year	able Stora Last Year	ge *** Avg	Watershed	Number of Data Sites	This Y	ear as % of r Average		
BIGHORN LAKE	1356.0	846.3	824.1	855.6	WIND RIVER (Wyoming)	12	53	96		
TONGUE RIVER	68.0	31.2	36.5	48.2	SHOSHONE RIVER (Wyoming	) 5	65	122		
					BIGHORN RIVER (Wyoming)	15	57	107		
					LITTLE BIGHORN (Wyoming	) 2	61	88		
					TONGUE RIVER (Wyoming)	5	55	102		
					POWDER RIVER (Wyoming)	6	53	118		
					LOWER YELLOWSTONE RIVER	29	59	106		
					YELLOWSTONE BASIN	4.8	72	123		

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table. The average is computed for the 1961-1990 base period.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.





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# Montana

Basin Outlook Report
Natural Resources Conservation Service
Bozeman, MT

